Vale District Bureau of Land Management

Integrated Restoration Strategies on Western Rangelands: A Research Project

Environmental Assessment

EA No. OR-030-03-003

Decision Record

This decision record documents my decision to select and implement the proposed alternative. This action was analyzed in the attached Environmental Assessment (EA OR-030-03-003).

I have reviewed this project and its compliance with NEPA, and have determined that the proposed action is tiered to and in conformance with the 1983 Northern Malheur Management Framework Plan, Ironside Rangeland Program Summary for North Harper Allotment, the 1984 Southern Malheur Rangeland Program Summary , the Malheur County Land Use Plan, and BLM policy, and that no further environmental analysis is required. Furthermore, the proposed action is in conformance with the applicable federal regulations regarding livestock grazing.

This project includes the following actions within the Malheur Resource Area, Vale, Oregon: 1) construction of five research exclosures, and 2) vegetation manipulations for the purpose of conducting specific research within the enclosures. The purpose of the research is to 1) study the effect of simulated grazing on seed production of cheatgrass, and 1) study competitive interactions involved in weed control on western rangelands.

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Approving Official Date

FINDING OF NO SIGNIFICANT IMPACT: Environmental Assessment No. OR-030-03-003 for the Malheur Field Office adequately analyzes the impacts of the proposed action and a reasonable range of alternatives and indicates there will be no significant adverse effects on the quality of the human environment. Therefore, no Environmental Impact Statement will be prepared.

s/Tom Dabbs, Malheur Field Manager January 28, 2003

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Approving Official Date

Environmental Assessment

I. PURPOSE AND NEED

The purpose of this Environmental Assessment (EA) is to analyze impacts to four sites selected on Bureau of Land Management (BLM) lands in the Vale District where small enclosures would be constructed for the purpose of conducting research. The studies resulting from construction of these exclosures and subsequent research plots are part of a larger cooperative effort to determine optimal restoration techniques for controlling weedy species across western rangelands. The Integrated Restoration Strategies (IRS) consortium produced to oversee project development and implementation includes the following: University of Nevada at Reno (lead institution), Oregon State University, Utah State University, the Rocky Mountain Research Laboratory (USFS), Forest and Rangeland Ecosystem Science Centers (USGS), the Agricultural Research Service (ARS), and the BLM. Much of following background material and experimental design information comes from an IRS grant proposal submitted in 2001 (Norwak et al., 2001, unpublished document).

The need for such research is apparent. Cheatgrass (*Bromus tectorum)* is an invasive annual grass that dominates almost 2.9 million acres of BLM land in the Great Basin (Pellant & Hall 1994). Cheatgrass has greatly altered the historic natural community and fire dynamics of Great Basin rangelands by increasing the fine fuel needed to carry frequent fires (Billings 1990). If present, cheatgrass usually exists as a mere component of the plant community until a fire occurs, after which it expands its dominance by replacing fire-sensitive native shrubs and by competing successfully with native perennial grasses (Young et al. 1987). Once converted, these cheatgrass-dominated sites reduce suitable habitats for many wildlife species, accelerate erosion, provide an unpredictable forage supply for livestock, and thereby lower the economic value for ranchers. Furthermore, secondary weeds are beginning to emerge as significant components in cheatgrass-dominated lands. Thus, to decrease the ecologic and economic impacts of these invasive weeds, we need to break the cheatgrass-induced fire cycle by restoring Great Basin rangelands to a diverse, native plant community. Non-native species have in places been used with success in breaking this cycle.

Two biological features contribute to the remarkable success of cheatgrass (Smith et al. 1997): prolific seed production and high competitive ability. Seed production by cheatgrass can be 10-100 times greater on burned sites in the first year after fire, and although population density may be relatively small during this first year after a fire, field and modeling studies demonstrate that cheatgrass populations have an 80-90% risk of exploding to densities near 10,000 plants m^{-2} within 10 years (Young & Evans 1978; Pyke 1995). Fall germination and greater root elongation at low soil temperatures (Harris 1967) as well as competitive displacement of root systems (Melgoza & Nowak 1991) enable cheatgrass to compete for limited soil resources. Thus, cheatgrass competes with native species for soil water and negatively affects the water status and productivity of new and established perennial plants (Melgoza et al. 1990). Strategies to enhance the restoration of Great Basin native rangeland must therefore destabilize the cheatgrass dominance by reducing the abundance of cheatgrass seed followed by establishing species that are competitive with cheatgrass.

All IRS project activities include the following supporting objectives:

1. Conduct a series of common experiments across the Great Basin that are designed to test management techniques for controlling cheatgrass and other weeds, establishing native plant communities, and restoring ecosystem structure and function while reducing the high cost of current restoration efforts.
2. Provide a sound ecological understanding of why cheatgrass control and native species restoration techniques succeed or fail.
3. Develop conceptual and economic basis for choosing appropriate management techniques for the range of conditions that exist within the Great Basin.

4. Use active partnerships among governmental agencies, universities, cooperative extension, and land managers to convey knowledge of the processes, techniques, and results to ranchers and other rangeland professionals.
5. Use partnerships with educators to increase student and public awareness of invasive species issues and to develop educational tools that convey solutions to invasive species and native plant restoration problems.

II. RELATIONSHIP TO PLANNING

The Northern Malheur Management Framework Plan (1983) and Southern Malheur Rangeland Program Summary (1984) were reviewed, and it was determined that actions proposed in the "Integrated Restoration Strategies on Western Rangelands: A Research Project" are consistent with the objectives, goals and intent of these Land Use Plans.

III. DESCRIPTION OF PROPOSED ACTIONS AND ALTERNATIVE

A. PROPOSED ACTIONS

There would be four areas (see IX. Maps) impacted by the following proposed actions: two are approximately 3.5 acres in size (Proposed Action #1), and two are approximately 60 acres in size (Proposed Action #2). All four locations are within Malheur Resource Area, Vale District BLM, Malheur County, Oregon. Proposed Action #1 would affect the following two areas: a site located at the described latitude and longitude (N43°54'37'' W117°09'44''), Section 24, Range 45 E, Township 19 S. in the North Harper Grazing Allotment in the Lincoln Bench Pasture, and a site located at the described latitude and longitude (N43°34'10'' W117°06'35''), Section 16, Range 46 E Township 23 S in the Board Corrals Grazing Allotment in the Alkali Pasture. Proposed Action #2 would affect the following two sites: one site located at the described latitude and longitude (N43°53'88'' W117°08'12''), Section 19, Range 46 E, Township 19 S in the North Harper Grazing Allotment in the Lincoln Bench Pasture, and a site located at the described latitude and longitude (N43°35'91'' W117°07'35''), Section 5, Range 46 E Township 23 S in the Board Corrals Grazing Allotment in the Alkali Pasture.

Proposed Action #1: Effect of Simulated Grazing on Seed Production of Cheatgrass

1. Study Description, Goals, and Objectives

One of the control methods for *Bromus tectorum* L. (cheatgrass) under evaluation is the use of prescribed grazing to suppress cheatgrass growth and thereby reduce its seed bank. Grazing by sheep and cattle has been considered before as a cheatgrass control method (Vallentine and Stevens 1994; Mosley 1996). Some of the earliest evidence includes empirical observations that heavy spring grazing could practically eliminate dense stands of cheatgrass (Daubenmire 1940; Mosley 1996). However, the evidence that grazing can effectively reduce a cheatgrass seed bank is inconclusive due to a lack of statistical analysis in earlier manipulative studies, along with no direct analysis of the effect of defoliation on seed produced from any plant regrowth. The following questions led to the development of this proposed study:

1. Does controlled grazing of cheatgrass reduce the cheatgrass seed bank over a growing season?
2. How do the timing, intensity, and frequency of grazing influence cheatgrass seed production?
3. How does cheatgrass biomass, density, and tiller number change as a result of grazing?

4. Are there environmental cues that can be used to assist in decisions of when to apply treatments?

The following objectives have thus been defined for this research project:

Study Objective 1: To measure the relative roles of the timing, intensity, and frequency of grazing on cheatgrass seed production, biomass, and density over a growing season.

Study Objective 2: To determine if there are any correlations between cheatgrass phenology and environmental cues such as soil moisture levels, temperature, and photoperiod to assist in decisions pertaining to the timing of treatments.

2. Experimental Design and Application Timeline

A small exclosure, 100 meters by 150 meters and approximately one hectare in size (3.5 acres), would be constructed in the winter/spring months (December, 2002 – May, 2003) at each of the two study sites. The exclosures would be constructed of steel fence posts and four-strand barbed wire with smooth bottom wire to permit movement of wildlife. All construction would be according to BLM specifications. No mechanical disturbance to the ground would be necessary prior to construction of the fences. Both exclosures are adjacent to roads, and materials could be carried by hand or on an all-terrain vehicle to the sites. At these two sites, cheatgrass and any other species over the specified heights would be clipped with hand shears at two different phenological stages, intensities (heights), and frequencies in order to simulate sheep and cattle grazing. A buffer surrounding each treatment area would be mown with a lawn mower to prevent external seed dispersal into the treatment area. Clipping would be carried out during the growing season for cheatgrass, including parts of April, May, and June according to the requirements of the specific treatments. Clipped grass, forbs, and seed would be bagged and removed from the site in order to take measurements, while plants mown in the buffer area would be moved away from the treatment plots and discarded in the field. A total of nine treatments would be randomly located using a randomized complete block design. Each experimental unit would consist of a 1-m^2 treatment area surrounded by a 1-m buffer, for a total area of 3x3-m^2 per unit. Each treatment would be replicated nine times in separate plots; thus, at each site there would be nine 81-m^2 replicate plots, for a total area of 729 m^2.

The total area affected by this study would be approximately seven acres. The exclosures would be in place for at least two years, with the possibility of retaining them for a longer period for the purpose of conducting additional research. All fence materials would be removed by either the research group or BLM, depending on the length of time the BLM wishes to retain the exclosures after research studies are concluded. After removal of the fences, the areas would again be available for livestock grazing.

3. Livestock Management

Livestock would be excluded from both exclosures for the duration of the research project and any additional time the exclosures would remain for the purpose of conducting research.

Proposed Action #2: Competitive Interactions Involved in Weed Control on Western Rangelands

1. Study Description, Goals, Objectives

This experiment specifically focuses on competitive relationships between cheatgrass and native species and how these may change with weed abundance or with soil nitrogen availability.

Various scientists suggest that some native species, such as squirreltail (*Elymus elymoides*) (Hironaka & Tisdale 1963; Hironaka & Sindelar 1973, 1975; Humphrey & Schupp 1999), are able to compete effectively with cheatgrass, and the species and life form of neighboring plants may reduce cheatgrass seed production by 75% (Reichenberger & Pyke 1990). Although these natives may not be the most desirable species to dominate a completely restored site, they may provide an intermediate transition state to facilitate conversion from cheatgrass dominance to a diverse, perennial native plant community.

Study Objective 1: To identify which native species are more competitive with cheatgrass under these different environmental conditions and can then be used to enhance the transition from cheatgrass dominance to a diverse, native plant community.

Study Objective 2: To determine if weed abundance or soil nitrogen availability alters cheatgrass growth and thus its competitive advantage.

Study Objective 3: To determine the underlying ecological mechanisms for the observed results.

2. Experimental Design and Application Timeline

An exclosure, 805 meters by 645 meters and approximately 17 hectares in size (60 acres), would be constructed at the Alkali study site. Two exclosures, one 644 meters by 402 meters and the other 402 meters by 245 meters, would be constructed at the Lincoln Bench site. All exclosures would be constructed of steel fence posts and four-strand barbed wire with a smooth bottom wire to facilitate movement of wildlife. These exclosures would be constructed in winter/spring (December, 2002 – May 2003), and the only disturbance to the sites would be mechanical removal of shrubs along the fence lines. Because the potential number of species that could be used in this experiment is very large and hence the number of treatment combinations would quickly become unmanageable, this experiment would be split into two parts: a) a screening trial focused on the first objective (identifying promising plants); and b) an experiment focused on the second objective (mechanisms of competition) that uses species with representative life histories.

The competition screening trial would have a split-split plot design with weed abundance as the main plot factor, presence/absence of invasive weeds as the split plot factor, and plant variety as the split-split plot factor. All invasive weeds would be removed from half of each of 2 blocks using one or more chemical applications of a BLM-approved glyphosate product at the rate of up to two pounds per acre of active chemical in the spring prior to seeding, coupled with hand weeding as needed. Any herbicide treatment with glyphosate would be made in accordance with Pesticide Use Proposal (PUP) #VAD-98-02 and product label, as well as would follow the Standard Operating Procedures defined in the Vale District's Weed Environmental Assessment (EA). In the other half of each block, invasive weeds would be allowed to germinate and grow unimpeded. Within each split plot, a randomized block design would be used in which 25 plant accessions, including several bluebunch wheatgrass (*Pseudoroegneria spicatum*), squirreltail (*Elymus elymoides*), Indian ricegrass (*Oryzopsis hymenoides)*, basin wildrye (*Leymus cinereus)*, bluegrass (*Poa* sp,) the non-native species crested wheatgrass (*Agropyron cristatum*), and selected forb species/accessions are completely randomized within each block. The seeding would be accomplished using a Truax® or Rough Rider Rangeland Drill. Pounds of seed used would vary by species. These screening trials would be seeded in the second year (2003) of the study and would be repeated in the third year (2004). Any rush skeletonweed plants within the exclosures would be spot treated with Tordon 22K in late fall each year by a BLM herbicide contractor or by the Oregon Department of Agriculture.

For competitive mechanism determination, researchers would seed monocultures and mixtures of the five native species/accessions and the one introduced species with different life history strategies and physiological characteristics. These species are the same as those listed in the

paragraph above. The effect of cheatgrass competition on the establishment of the perennial species, as well as the effect of the perennial plants on cheatgrass reproduction, would be evaluated by seeding 3 different densities of cheatgrass into a fixed density of each of the perennial plant monocultures and into 2 densities of the native species mixture. The plots would be prepared in spring 2003 prior to planting by one or more applications of a BLM-approved glyphosate product. The plots would then be seeded the following fall (2003) as dormant plantings using the same Truax® or Rough Rider Rangeland Drill stated above. Soil nitrogen availability would be altered on half of each block using sugar applications similar to those in earlier studies (Young et al. 1999). For the seeding treatments with cheatgrass, the additional seeds would be superimposed over the grid used to seed native species. The plots would be weeded during the first growing season to maintain the proper plant densities. Perennials often require 2-3 years for establishment and seedling mortality can occur in the second year if cheatgrass densities increase. Thus, the planted cheatgrass would be allowed to seed in the first year, and all plots would be monitored one to two additional years.

A buffer surrounding each treatment area would be mown with a lawn mower to prevent external seed dispersal into the treatment area. The total area affected for this study would be approximately 60 acres for each site. The exclosures would remain on site for a minimum of five years, with the possibility of retaining them for a longer period for the purpose of conducting additional research. All fence materials would be removed by either the research group or BLM, depending on the length of time the BLM wishes to retain the exclosures after research studies are concluded. After removal of the fences, the areas would again be available for livestock grazing.

3. Livestock Management

Livestock would be excluded from all exclosures for the duration of the research project and any additional time the exclosures would remain for the purpose of conducting research.

B. ALTERNATIVE – NO ACTION

Under this alternative, no fences would be built for the four exclosures; as a result, no research as proposed on cheatgrass control and restoration of perennial grasses and forbs would be conducted.

IV. AFFECTED ENVIRONMENT

1. Upland Vegetation

At the North Harper Allotment site, within the small exclosure where the clipping study would be conducted, vegetation consists almost solely of exotic species, many of them annuals. The only two native species found on site are Sandberg bluegrass (*Poa secunda*) and willow weed (*Epilobium paniculatum*). Exotic annual species consist of cheatgrass, tumblemustard (*Sisybrium altissimum*), prickly lettuce (*Lactuca serriola*), salsify (*Tragopogon dubia*), burr buttercup aka curveseed butterwort (*Ceratocephala testiculata*), and clasping pepperweed (*Lepidium perfoliatum*). A few individuals of the perennial crested wheatgrass are scattered within the site. All species at the small exclosure are also represented at the larger exclosure, along with the native perennial squirreltail, bluebunch wheatgrass, long-leaf phlox (*Phlox longifolia*), mariposa lily (*Calorchortus* sp.), and Munroe's globemallow (*Sphalaraclea munroana*). Additional annual species include tarweed (*Madia* sp.), sixweeks fescue (*Vulpia octoflora*), Russian thistle (*Salsola kali*), fiddleneck (*Amsinckia* sp.), blue mustard (*Corispora tenella*), and jagged chickweed (*Holosticum* sp). Very few shrubs are found in the area, with charred stumps indicative of a wildfire in the past. Scattered big sagebrush (*Artemisia tridentata* ssp. *tridentata* and *Artemisia tridentata* ssp. *wyomingensis*) are found along the northern and western portion of this exclosure.

At the Board Corrals Allotment site, the smaller exclosure supports a mix of one native perennial, Sandberg bluegrass, and five exotic annuals, including cheatgrass, Russian thistle, clasping

pepperweed, blue mustard, and annual wheatgrass (*Eremopyrum triticeum*). At the larger exclosure, all the above species are also present, along with burr buttercup, six's weeks fescue, salsify, and a few scattered crested wheatgrass plants. The only shrub on site is spiny hopsage (*Grayia spinosa*).

2. Special Status Plants

No special status plants are known to occur at either project locations. Two plant species, Mulford's milkvetch (*Astragalus mulfordiae*) and Malheur forget-me-not (*Hackelia cronquistii*), are known in the vicinity of the project in the North Harper Allotment. Mulford's milkvetch is found approximately 6 miles west of the two exclosures, and Malheur forget-me-not is found approximately 2 miles northeast of the larger exclosure. However, neither species has been found to occur at or near either study site due in part to lack of suitable habitat for these species. Two additional plant species, smooth blazing star (*Mentzelia mollis*) and Cusick's chaenactis (*Chaenactis cusickii*), are known to occur in the general vicinity of the Succor Creek study locations. Both species are found approximately 2 miles north of the larger exclosure and two miles west of the smaller exclosure. Again, suitable habitat is lacking for both these species at the study sites, and the species have not been found in the immediate vicinity.

3. Wildlife and Special Status Animal Species

The proposed North Harper study site is habitat for many species of locally to regionally important wildlife species. These include sage thrasher, sage sparrow, Brewers sparrow, long-billed curlew, loggerhead shrike, western burrowing owl. Additionally, the area is important deer winter range and is used at any time of the year by pronghorn. Other wildlife species common in this area includes black-tailed jackrabbits, horned larks and coyote. Most species would be present in area of higher shrub densities but curlews, horned larks, burrowing owls and pronghorn thrive in areas of low density shrubs. No federally listed or proposed species would be expected in the area.

The proposed Board Corral study site is not as important a wildlife habitat as the former area. Wildlife species generally are limited to long-billed curlews, burrowing owls, and horned larks. Pronghorn, mule deer, coyotes and jackrabbits likely are present only as transients, due to the lack of cover and proximity of the county road. No federally listed or proposed species would be expected in the project area.

4. Soils and Watershed

The soils found in the research project area in Board Corrals Allotment were surveyed and described in Oregon's Long Range Requirements for Water 1969, Appendix I-11, Owyhee Drainage Basin. Unit 60 and 56 occur on 2 to 7 percent slopes.

The area has Unit 60 soils that are moderately fine textured, well drained soils underlain by old lacustrine sediments. They occur on gently sloping to hilly uplands in conjunction with Unit 56 soils. Native vegetation consists mostly of big sagebrush, rabbitbrush, bluebunch wheatgrass, and Sandberg bluegrass. This soil has a high potential for range seeding.

Unit 56 soils are shallow, well drained soils with clayey subsoils and cemented pans. They occur on very extensive, gently sloping to moderately steep old fans on high terrace remnants. This soil occurs mixed with Unit 60 soils. Native vegetation consists mostly of big sagebrush, low sagebrush, rabbitbrush, budsage, shadscale, spiny hopsage, needlegrass, and squirreltail grass. This soil has potential for range seeding.

The soils found in the research project area in North Harper Allotment were surveyed and described in Oregon's Long Range Requirements for Water 1969, Appendix I-10, Malheur Drainage Basin. Nyssa and Malheur series occur on 2 to 7 percent slopes.

The small exclosure area has Nyssa soils that are moderately deep, well drained soils with a weakly cemented pan formed on higher terraces along the Snake River underlain by lacustrine materials or old alluvium and mantled by thin loess. The terraces are dominantly gently sloping, but range to steeply sloping where dissection has occurred. Native vegetation consists mostly of bluebunch wheatgrass, Thurber's needlegrass, Atriplex spp., and big sagebrush. This soil has a high potential for range seeding.

The large exclosure area has Nyssa soils in conjuction with Malheur soils. Malheur soils are moderately deep, alkali soils on high terraces above the Malheur River. They occur on nearly level ground. Native vegetation consists mostly of bluebunch wheatgrass, shortawn needlegrass, Sandberg bluegrass, and big sagebrush. This soil has a high potential for range seeding.

Microbiotic crusts have not been inventoried in either area, but are known to exist throughout both regions.

5. Cultural Resources and Paleontology

Pre-European contact Native American peoples living in southeastern Oregon were entirely dependent upon the locally available food resources. As climatic fluctuations created population and habitat changes in the plant and animal communities, humans adjusted their hunting and gathering areas and their technology accordingly. The Native people of the Great Basin, who practiced the ancestral lifeways into the 19th century, were heirs to an extremely ancient cultural tradition with a technology both effective and efficient, with many multi-functional, light-weight and expendable tools. Prehistoric occupation of the area is represented by rock art, camping sites, tool stone quarry sites, lithic scatters, rock shelters and rock alignments and cairns.

Exploration into this area during the Historic period began with the expeditions of John Jacob Aster, after he heard the stories from the Lewis and Clark Expedition of 1804-1806. The first written observations of southeastern Oregon can be found in journals kept by men involved in the expansion of fir trapping territory. Trapping occurred along the major and minor tributaries of the Owyhee River. The era of the fur trade provided the basis for American families to travel west. Travel across the west began in earnest as descriptions of the wealth in the West spread through the East. The most famous of travel routes in this area is the Oregon Trail, the main corridor to travel from the early 1800s. The Trail crosses into Oregon at Nyssa and turns north passing the western side of Rhinehart Butte, crossing the Malheur River at Vale and heading north to Farewell Bend. The route of the Oregon Trail parallels and criss-crosses Lytle Boulevard. A corridor adjacent to a portion of that trail south of the town of Vale identified as a property of national significance with designation as the Oregon Trail Keeney Pass Historic District. Management of this corridor is designed to preserve and enhance the visual integrity and aesthetic values of the area surrounding the Oregon Trail. During the 1860s, the majority of Euro-Americans in southeastern Oregon were involved with horses, cattle, grain, and hay production, or road building, ferrying. freighting, or were associated with the military. Euro-American settlements, like those of Native Americans can be found around water sources. The floodplain of the Owyhee River was prime farm land for hay, and fruit. Historic occupation of the area is represented by the presence of wagon routes, rock fences and alignments, trash dumps, and homesteads.

The Sucker Creek and Deer Butte formations are two of the most famous and most extensive ash flows of the Miocene era. The ash and lava expelled during the middle Miocene occurred during one of the most explosive volcanic episodes which resulted in calderas up to 22 miles in diameter. Both Formations yield preserved fossil plants such as oak, pine, willow and maple as well as vertebrate fossils of horse, rhinoceros, peccary, camel and oreodonts. Newly identified fossil localities have yielded fossil species of moles, shrews, bats, rabbits, and other rodents.

6. Visual Resource Management (VRM)

The exclosure in Section 24, T. 19 S., R. 45 E. would be within a visual resource management Class III area; the other four exclosures would be a Class IV area. The management objective of VRM Class III is to partially retain the existing character of the landscape. The level of change should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements of form, line, color and texture found in the predominant natural features of the characteristic landscape. Within a VRM Class IV area, the objective is to provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements found in the predominant natural features of the characteristic landscape.

7. Recreation

All four locations of the exclosures would be in locations where driving for pleasure on existing roads and/or hunting activities would occur as the dominate dispersed recreation activities.

8. Livestock Management

The proposed exclosures and research treatments within North Harper Allotment (00402) are entirely within the 5,544 acre Lincoln Bench Pasture. Eight permittees are authorized to graze livestock in the community allotment, although only three currently use Lincoln Bench Pasture in their grazing rotation. Active animal unit months (AUMs) within the 31,500 acre allotment are listed below: No grazing authorization for use in North Harper Allotment is currently held in suspension.

Permittees who currently use Lincoln Bench Pasture

Frank Shirts (sheep)	400 AUMs
Harry Smith (cattle)	566 AUMs
Gary Boor (cattle)	143 AUMs

Permittees who currently do not use Lincoln Bench Pasture

Steve and Becky Hawkins	809 AUMs
Findley Land & Livestock LLC	1602 AUMs
Van Schulthies	84 AUMs
Ray Schulthies Estate	135 AUMs
Darrell Standage	96 AUMs
Jerald and Tammy Holloway	278 AUMs

North Harper Allotment is located immediately south of Vale, Oregon, and is part of the Harper Basin Management Unit. Boundaries of the allotment are approximately defined by Cow Hollow to the south, Lincoln Bench to the east, agricultural land in Sand Hollow to the north, and Johnson Gulch to the west.

North Harper Allotment was classified as "I" (Intensive Management) category allotments for management in the 1981 Ironside EIS Area Rangeland Program Summary Record of Decision. The season of use authorized within North Harper Allotment by the allotment management plan is between April 1 and October 15 annually with a deferred rotation system.

The proposed exclosures and research treatments within Board Corrals Allotment (10507) are within the 18,254 acre Alkali Pasture. Four permittees are authorized in the community allotment, although only three currently use the Alkali Pasture. Active 4182 and suspended<1778> animal unit months (AUMs) within the 55,637 acre allotment are listed below. Markley's use of Alkali Pasture depends on the year and when the pasture is scheduled for use.

Permittees who currently use the Alkali Pasture

John and Lisa Davis	448 AUMs	<172 AUMs>
Larry and Kay Davis	447 AUMs	<172 AUMs>
Owhyee Outback Ranch	2401 AUMs	<1073 AUMs>
Irene Markley	886 AUMs	<361 AUMs>

Board Corrals Allotment is located south of Adrian, Oregon, and is part of the Mahogany Management Unit. Boundaries of the allotment are approximately defined by the north end of Succor Creek area to the south, the Owyhee Reservoir to the west, agricultural land and adjacent Idaho to the east, and Blackjack Allotment to the north.

Board Corrals Allotment was classified as "I" (Intensive Management) category allotments for management in the 1984 Southern Malheur Environmental Impact Statement, Rangeland Program Summary (RPS) Record of Decision. The season of use authorized within Board Corrals Allotment is seasonlong, with use in the Alkali Pasture made from 11/1 to 4/1.

9. Area of Critical Environmental Concern (ACEC)

None of the study sites are in an area of critical environmental concern. The study exclosures in the North Harper Allotment are east of the proposed Oregon Trail ACEC, but they are neither directly adjacent to the ACEC nor visible from its proposed eastern boundary.

10. Climate/Topography

The proposed exclosures and research treatments within North Harper Allotment (00402) would be located in rolling hills of Lincoln Bench Pasture where the elevation above sea level ranges from 2500 feet to 2700 feet. Semi desert shrub steppe vegetation communities result from cold winters and hot dry summers. The long term average annual precipitation measured at Vale, Oregon (seven miles north of the project site) is 9.77 inches (National Oceanic and Atmospheric Administration Climatological Data Annual Summary; Oregon 1999; note 2000 and 2001 Annual Summaries are missing data for this station). Precipitation occurs primarily as snow fall during the winter with occasional mid-summer thunder storms.

11. Noxious Weeds

Within the smaller North Harper Allotment study site, whitetop (*Cardaria draba*) is present along with field bindweed (*Convovulus arvense*) and medusahead wildrye (*Taeniatherum caput-medusa*). Just outside the area to be exclosed is Scotch thistle (*Onopordium acanthium*). At the larger study site, these four species are also present, along with two locations of rush skeletonweed (*Chondrilla juncea*).

No noxious weeds are found within the smaller Board Corrals Allotment exclosure, although jointed goatgrass (*Aegilops cylindrical*) is along the Succor Creek road several hundred feet to the west. At the larger exclosure, a small patch of whitetop is found within the exclosure, and halogeton (*Halogeton glomerata*) occurs along the road shoulders approximately 50 feet south of the exclosure. Medusahead wildrye is also present.

12. Critical Elements of the Human Environment

	Absent/ Unknown	Present, No Impact	Present, Discussed in EA
Air Quality Concerns	X		
Areas of Critical Environmental Concern	X		

Cultural Resources	X		
Environmental Justice	X		
Floodplains	X		
Hazardous Substances or Solid Wastes	X		
Native American Religious Concerns	X		
Noxious weeds, Invasive species			X
Prime or Unique Farm Lands	X		
Special Status Species	X		
Visual Resources Management	X		
Water Quality Concerns	X		
Wetlands/Riparian Zones	X		
Wild and Scenic Rivers (eligible)	X		
Wilderness Study Areas	X		
Wild Horse Herd Management Areas	X		
Energy and Mineral Resources	X		

V. ENVIRONMENTAL CONSEQUENCES/IMPACTS

A. Proposed Actions Alternative

1. Upland Vegetation

Proposed Action #1: Only cheatgrass would be disturbed at the two smaller exclosures for the duration of the clipping study. No long term impacts to this annual species would be anticipated.

Proposed Action #2:In the three larger exclosures, all species sprayed by the applications of a glyphosate product would be killed except certain noxious weeds which may be controlled only. Because of mitigations, as defined in this environmental assessment and based on the Vale District's Weed EA, which would be employed during application of the herbicide, drift would be limited to the immediate proximate federal land, with no drift anticipated to private and/or agricultural lands. In the long term, species which survived as a result of being seeded on site would contribute to improved vegetative conditions at both locations. Effects of the application of sugar may include decrease in plant growth in the short term, along with decrease in soil nitrogen and an increase in soil microbial biomass. Long term impacts would include reduction in cheatgrass establishment and increase in perennial plant establishment. Because the goal of the project is to establish perennial species in the two larger plots, the long term impact anticipated is establishment of perennial species adapted to the site and displacement of the cheatgrass and other annual components.

2. Special Status Plants

Proposed Actions #1 and 2: Due to the absence of known special status plants or suitable habitat at or near the proposed projects, no impacts would occur to special status plants. Any chemical drift due to application of herbicide would be too remote from known sites within the general areas to affect known populations of the special status species.

3. Wildlife and Special Status Animal Species

Proposed Actions #1 and #2: Impacts to wildlife would occur from the following: 1.) disturbance to wildlife during fence construction and maintenance, 2.) hazards to wildlife from the fence (running/flying into wires, predators using posts as hunting perches etc), 3.) Increased disturbance to wildlife from researchers traveling to the sites and while collecting data, 4.) Loss of cover and forage.

With fence construction occurring during the winter months when birds are not nesting, there should be minimal risk of disturbance to nesting birds at the construction site and along the access route

New barbed wire fences are a known hazard to wildlife running or flying into wires. Building fences to BLM standards will reduce the potential impacts to big game species (smooth bottom wire at least 16" above ground and top wire not more than 42"). Attaching flagging to the wires to make the new fence more conspicuous to birds (especially owls) will reduce their risk (and the risk to OHV operators).

Researchers would be visiting the study sites during spring, summer, and fall. Wildlife species usually avoid areas with concentrated human activity. There is a potential for some species, such as curlews, to nest near a study site between researcher visits and be disturbed during subsequent visits until chicks are old enough to move away. Impacts likely will be insignificant.

The research activities (herbicide applications, seeding, and clipping) will reduce an insignificant amount of forage and cover to affect wildlife. The creation of livestock free areas within the exclosures may result in attracting some wildlife species to take advantage of the increased amounts of forage and cover in the non-study sites. Seeding plant species not otherwise found in the vicinity may also attract some additional wildlife use in the exclosures.

4. Soils and Watershed

Proposed Action #1 and #2: Construction and repair of fences and other administrative structure would create a minimal localized disturbance to soils. Other actions that would be taken as part of this proposal would have little impact to the soil/watershed resource.

Proposed Action #2: The drilling operations in the larger exclosures would result in a short-term impact to the soil resource in the form of mechanical soil disturbance while staging the operation and during the drilling process. The drilling process can disturb and loosen surface soil particles, increasing the erosion potential from both water and/or wind. There can also be disturbance (fragmentation) to biological soil crusts during drilling. These impacts would be present immediately following the drilling operation and continue into the following growing season. As the existing vegetation starts regrowth and the seeded species begin to establish, the soil/watershed conditions would improve. Seeding of desirable perennial species results in greater productivity and site stability. Where there is a reduction in single-species dominance, especially annual species, soil erosion rates would tend to decrease following recovery of perennial vegetation communities. The proposed drilling action would increase the potential for nutrient and microbiotic recovery under native vegetation conditions.

5. Cultural Resources and Paleontology

Proposed Actions #1 and #2: A review of the BLM site and survey files showed that adjacent to the project area in T. 19 S., R. 45 E., Section 24: The Oregon National Historic Trail parallels Lytle Blvd

and will not be affected by the project in that area. In T. 19 S., R. 46 E., Section 19/30 one survey was conducted for a research exclosure and no sites were located. Adjacent to the proposed exclosure in T. 23 S., R. 46 E., Section 5 surveys have been conducted and no sites located. In T 23 S., R. 46 E., Section 16 one site was located within a mile, but will not be affected by this project.

The areas proposed for this project would be inventoried for cultural and paleontological resources prior to ground disturbing activities. Class III survey methods would be used in areas with a high probability for yielding cultural resources. Cultural resources discovered during the survey, and those previously recorded, would be flagged, recorded and avoided as appropriate. If fossil floral or faunal resources are located during the survey, depending on the nature and extent of the fossil locality, the area would either be flagged and avoided during rehabilitation activities or the fossils would be recovered prior to rehabilitation activities. A single pass with a rangeland drill through the area would be permitted to avoid islands without vegetation which could draw unwanted attention.

6. Visual Resource Management

Proposed Actions #1 and #2: The establishment of each of the four exclosures would meet the management objectives for visual resource Class III and for Class IV designations. Each of them would be visible from the roads which they are adjacent to, with the highest traffic being on the Succor Creek county road, associated with the exclosure in section 21, T. 23 S., R 46 E..

7. Recreation

Proposed Actions #1 and #2: The presence of the exclosures would not interfere with any dispersed recreation activities.

8. Livestock Management

Proposed Actions #1 and #2: In the Lincoln Bench pasture, livestock would be excluded from one 3.5 acre enclosure, with mowed buffer area, and two fenced areas which exclude a 60 acre area with 10 foot mowed buffer strips through the two to five year duration of the studies and potentially for a longer period of time. The proposed exclusion area, including buffers, comprises less than two percent of the Lincoln Bench Pasture. Scheduled grazing within Lincoln Bench Pasture, as defined in the allotment management plan with a deferred system, identifies an average annual use of 387 AUM's by cattle. This use represents approximately 55 percent of the combined authorized use of 709 AUM's in North Harper Allotment by Harry Smith and Gary Boor. Thus, the proportionate loss of available forage from the area under research represents less than one percent of these two operators' authorizations. Sheep use is less well defined with terms of the permit requiring that camps be moved at least every fifth day to prevent repeat grazing of any area. Although Lincoln Bench Pasture is one of four pastures used by sheep, it is anticipated that the loss of use of less than two percent of this pasture would not affect Frank Shirt's authorized use of 400 AUM's in North Harper Allotment. Livestock grazing schedules would be adjusted short term within the flexibility of the allotment management plan to continue the authorization of livestock grazing in North Harper Allotment while continuing to meet management objectives. Proposed exclosures are not anticipated to impede livestock movement within the pasture.

In the Alkali Pasture, livestock would be excluded from one 3.5 acre enclosure, with mowed buffer area, and one fenced area which excludes a 60 acre area with 10 foot mowed buffer strips through the 2 to five year duration of the studies and potentially for a longer period of time. The proposed exclusion area, including buffers, comprises less than one percent of the Alkali Pasture. Scheduled winter grazing within Alkali Pasture results in an average annual use of 3,290 AUM's by cattle. This use represents approximately 79 percent of the combined authorized use of 4,182 active AUM's in the Board Corrals Allotment. Thus, the proportionate loss of available forage from the area excluded from grazing represents less than one percent of the operators' authorizations. Proposed exclosures are not anticipated to impede livestock movement within the pasture.

9. Noxious Weeds

Proposed Actions #1 and #2: Perennial noxious weeds such as whitetop, bindweed and rush skeletonweed might be controlled by glyphosate treatment, but may not be killed. Annual noxious weeds such as medusahead wildrye should be killed by the glyphosate treatment. In the exclosures where perennial vegetation would be established, the establishment of noxious weeds may be curtailed in the long-term because of the competitive nature of perennials. The Tordon spot treatment in late fall on skeletonweed should control the sites of this species.

10. Area of Critical Environmental Concern

Proposed Actions #1 and #2: The Oregon Trail ACEC would receive no direct or indirect impacts from the research project at North Harper.

CUMULATIVE IMPACTS OF THIS ALTERNATIVE

Short-term disturbance would occur to the vegetative components at the small sites where fences would be constructed and research would take place. There is a possibility that native/non-native plant species would become permanently established in the larger exclosures for an indefinite period of time following completion of research, which would be a positive long-term impact. No long-term impacts to livestock, wildlife, or soil resources are anticipated from this project.

B. No Action Alternative

1. Upland Vegetation

No impacts would occur to vegetation from the research treatments, and the sites would remain in their current vegetative states.

2. Special Status Plants

The status quo would be maintained in the area with no impacts to special status plants.

3. Wildlife and Special Status Animal Species

With no exclosure construction or research activities, no impacts would occur to wildlife species from these activities.

4. Soils and Watershed

No impacts would occur to soil/watershed resources, and the sites would remain in their current state.

5. Cultural Resources and Paleontology

There would be no effect to cultural or fossil resources as a result of the no action alternative. However, surface disturbance may be greater from livestock trampling and erosional factors without vegetation to provide surface stability.

6. Visual Resource Management

No impact or change of the existing esthetics associated with each of the four locations would be anticipated.

7. Recreation

No impact or change of the existing dispersed recreation activities would be anticipated at any of the four locations.

8. Livestock Management

Continuation of current livestock management actions, as defined in the allotment management plan for North Harper Allotment and in the absence of implementing new actions, would result in no additional impacts to opportunities to graze livestock within Lincoln Bench Pasture and North Harper Allotment. Continuation of current livestock management actions, as authorized for the Board Corral Allotment and in the absence of implementing new actions, would result in no additional impacts to opportunities to graze livestock within the Alkali Pasture of this allotment.

9. Noxious Weeds

The weeds occurring on site would not be impacted by proposed research activities and would be treated as appropriate.

10. Area of Critical Environmental Concern

No impact would occur to the Oregon Trail ACEC west of the proposed research exclosures in the North Harper area.

CUMULATIVE IMPACTS OF THIS ALTERNATIVE

There would be no change in the current management situation and no impacts to existing uses or resources from any new activities.

VI. CONSULTATION AND COORDINATION

(Name, Agency, Title of Individual)

Western Watersheds - Interested Public
Hal Shepard - Interested Public
Malheur County Court
Oregon Department of Fish and Wildlife
Oregon State Historical Preservation Officer
Burns Paiute Tribe
Confederated Tribes of the Umatilla
Frank Shirts
Harry Smith
Gary Boor
Steve and Becky Hawkins
Findley Land & Livestock LLC
Van Schulthies
Ray Schulthies Estates
Darrell Standage
Jerald and Tammy Holloway
John and Lisa Davis
Larry and Kay Davis
Owhyee Outback Ranch
Irene Markley

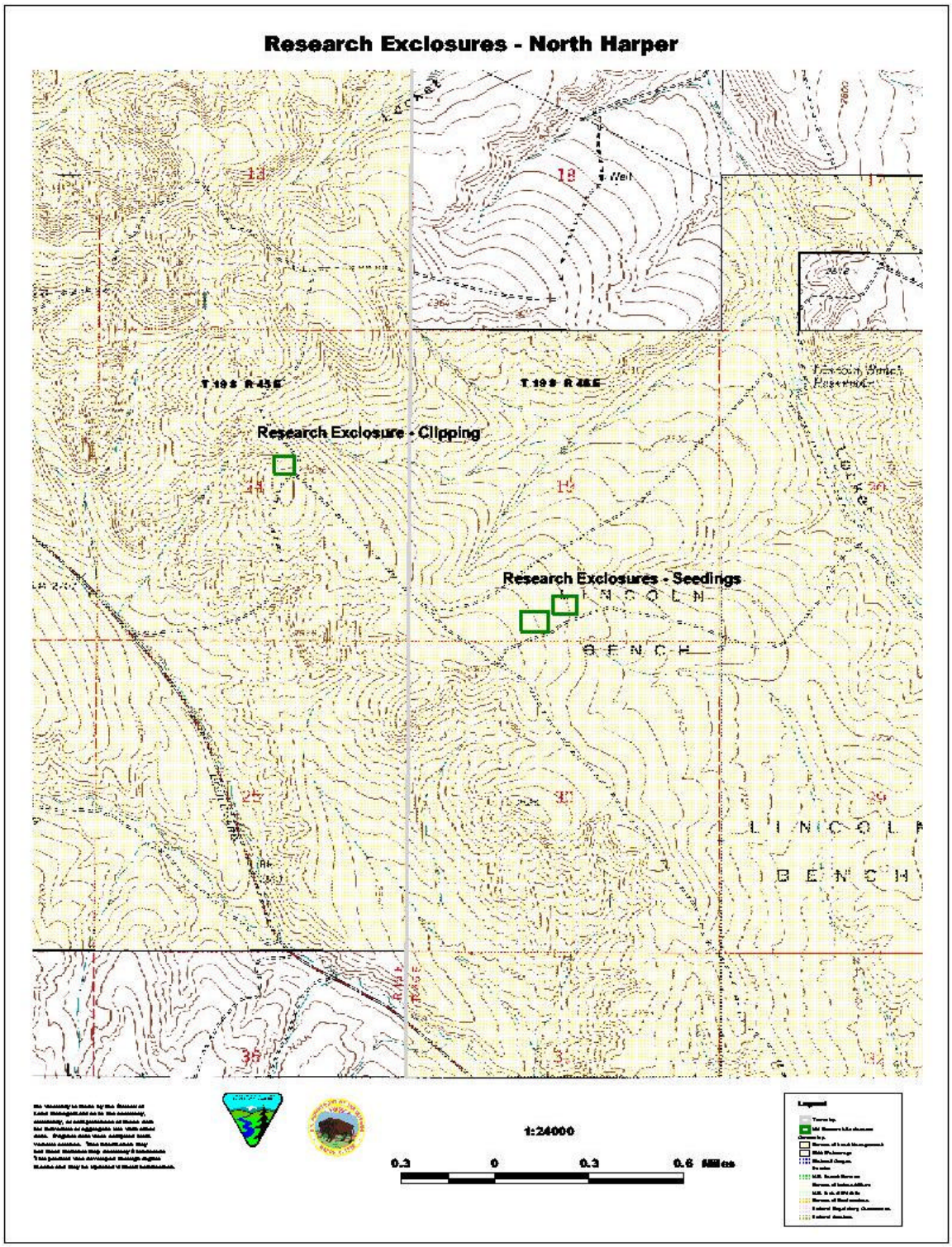
VII. ENVIRONMENTAL ASSESSMENT DECISION REPORT (Decision Record/Rationale)

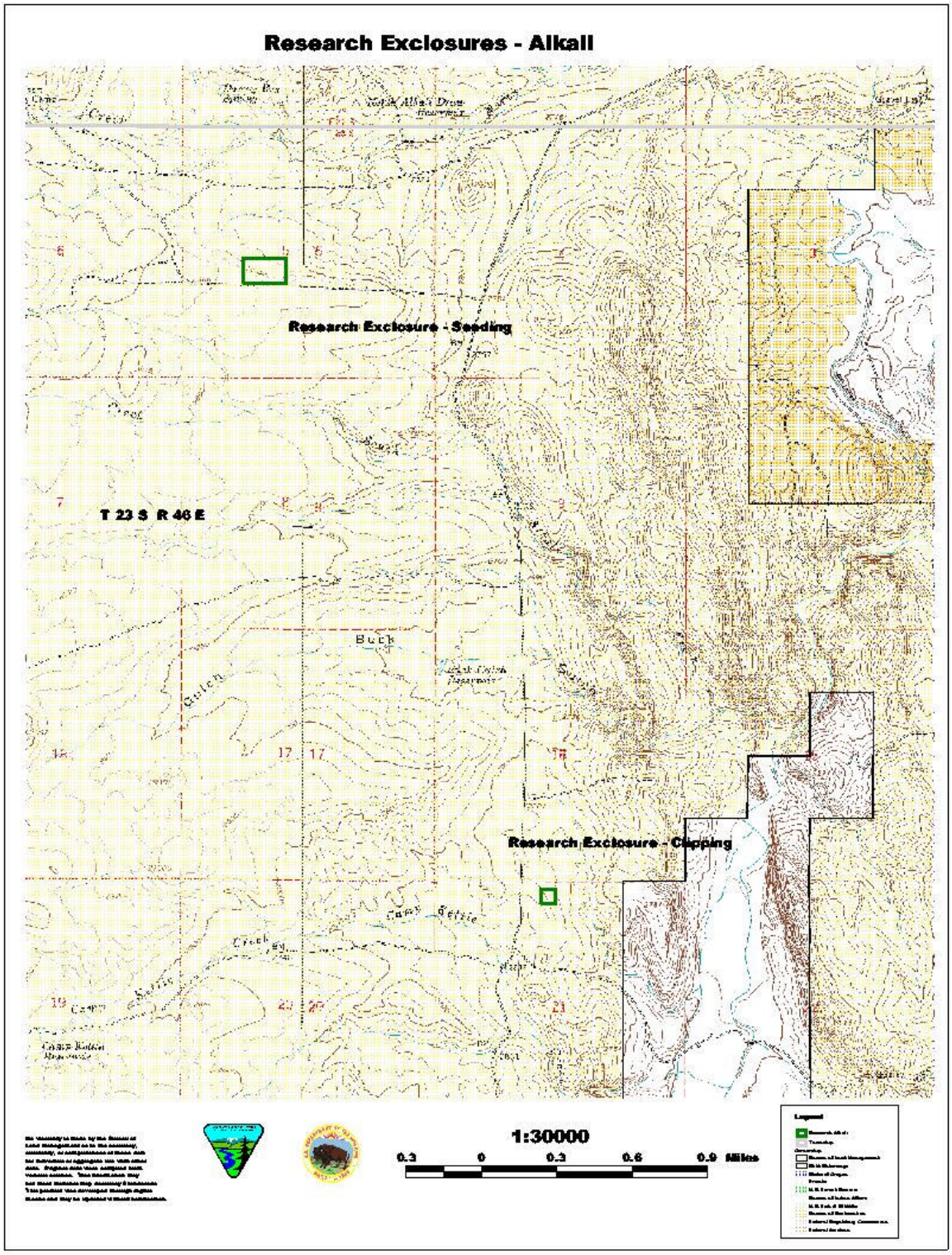
See page 2.

VIII. LIST OF PREPARERS/REVIEWERS

Team Leader	Jean Findley
NEPA Compliance & Planning	Wayne Wetzel
Hydrology & Soils	Shaney Rockefeller
Cultural Resources/Archaeologist	Diane Pritchard
Rangeland Mgt. Specialists	Steve Christensen, Mitch Thomas
Wildlife Biologists	Al Bammann
GIS Specialist	Brent Grasty
Botanist	Jean Findley
Outdoor Recreation Planner	Bob Alward
Weeds	Lynne Silva
NEPA Compliance & Planning, MRA	Tom Hilken

IX. MAPS


Research Exclosures - North Harper
Research Exclosure - Clipping
Research Exclosures - Seedings
T 19 S R 43 E
T 19 S R 44 E
LINCOLN
BENCH
1:24000
0.3 0 0.3 0.6 Miles


Research Exclosures - Alkali
Research Exclosure - Seeding
T 23 S R 46 E
Buck
Gulch
Research Exclosure - Clipping
1:30000
0.3 0 0.3 0.6 0.9 Miles

X. Referenced Material

Beran, Daniel D.; Masters, Robert A.; and Gaussoin, Roch E. 1999. Grassland legume establishment with imazethapyr and imazapic. Agronomy Journal 91: 592-596.

Beran, Daniel D.; Gaussoin, Roch E.; and Masters, Robert A. 1999. Native wildflower establishment with imidazolinone herbicides. HortScience 34: 283-286.

Beran, Daniel D.; Masters, Robert A.; Gaussoin, Roch E.; and Rivas-Pantoja, Fernando. 2000. Establishment of big bluestem and Illinois bundleflower mixtures with imazapic and imazethapyr. Agronomy Journal 92: 460-465.

Billings, W.D. 1990. Bromus tectorum, a biotic cause of ecosystem impoverishment in the Great Basin. Pages 301-322 IN: G.M. Woodwell (ed.). The Earth In Transition: Patterns and Processes of Biotic Impoverishment. Cambridge Univer. Press, N.Y.

Daubenmire, R.F. 1940. Plant succession due to overgrazing in the *Agropyron* bunchgrass prairie of southeastern Washington. Ecology 21(1): 55-64.

Fry, Jack D.; Gaussoin, Roch E.; Beran, Dan D.; and Masters, Robert A. 1997. Buffalograss establishment with preemergence herbicides. HortScience 32: 683-686.

Harris, G.A. 1967. Some competitive relationships between Agropyron spicatum and Bromus tectorum. Ecol. Monogr. 37:89-111.

Hironaka, M. and E. W. Tisdale. 1963. Secondary succession in annual vegetation in southern Idaho. Ecology 44:810-812.

Hironaka, M. and B. W. Sindelar. 1973. Reproductive success of squirreltail in medusahead infested ranges. J. Range Manage. 26:219-221.

Hironaka, M. and B. W. Sindelar. 1975. Growth characteristics of squirreltail seedlings in competition with medusahead. J. Range Manage 28:283-285.

Humphrey, L.D., and E.W. Schupp. 1999. Temporal patterns of seedling emergence and early survival of Great Basin perennial plant species. Great Basin Naturalist 59:35-49.

Melgoza, G., and R.S. Nowak. 1991. Competition between cheatgrass and 2 native species after fire: Implications from observations and measurements of root distribution. J. Range Manage. 44:27-33.

Melgoza, G., R.S. Nowak, and R.J. Tausch. 1990. Soil water exploitation after fire: Competition between Bromus tectorum (cheatgrass) and two native species. Oecologia 83:7-13.

Mosley, J.C. 1996. Prescribed sheep grazing to suppress cheatgrass: A Review. Sheep and Goat Research Journal 12(2): 74-81.

Nowak, Robert; Glimp, Hudson; Doescher, Paul; Tanaka, John; Schupp, Gene; Rasmussen, Alan; Call, Chris; Chambers, Jeanne; Tausch, Robin; Pyke, David; Blank, Bob; Jones, Tom; and Pellant, Mike. Intergrated Restoration Strategies Towards Weed Control on Western Rangelands (proposal). 2001. Pgs. 1-23.

Pellant, M. and C. Hall. 1994. Distribution of two exotic grasses on intermountain rangelands: status in 1992. p. 109-112 In: S. B. Monsen and S. G. Kitchen (complilers).). Proceedings—ecology and management of annual rangelands. General Technical Report INT-GTR-313, Ogden, UT, USDA Forest Service, Intermountain Research Station.

Pyke, D. A. 1995. Population diversity with special reference to rangeland plants. Pages 21-32, In: West, N.E. (ed.), Biodiversity of Rangelands. Natural Resources and Environmental Issues, Vol. IV, College of Natural Resources, Utah State Univ., Logan, UT.

Reichenberger, G. and D. A. Pyke. 1990. Impact of early root competition on fitness components of four semiarid species. Oecologia 85:159-166.

Smith, S.D., R.K. Monson, and J.E. Anderson. 1997. Physiological Ecology of North American Desert Plants. Springer, N.Y.USDA, Soil Conservation Service. 1991. Soil Survey of Elmore County Area, Idaho, Parts of Elmore, Owyhee, and Ada Counties.

Vallentine, J.F. and Stevens, A.R. 1994. Use of livestock to control cheatgrass – A review. In: Monsen, S.B. and Kitchen, S.G. (Eds.). Proceedings – Ecology and Management of Annual Rangelands. USDA Forest Service General Technical Report INT-GTR-313: 202-206.

Washburn, Brian E. and Barnes, Thomas G. 2000. Native warm-season grass and forb establishment using imazapic and 2,4-D. Native Plants Journal 1: 61-69.

Young, J.A., and R.A. Evans. 1978. Population dynamics after wildfires in sagebrush grasslands. J. Range Manage. 31:283-289.

Young, J.A., R.A. Evans, R.E. Eckert Jr., and B.L. Kay. 1987. Cheatgrass. Rangelands 9:266-270.

Young, J.A., R.R. Blank, and D.C. Clements. 1999. Nitrogen enrichment and immobilization influences on the dynamics of annual grass community. Pp. 279-281. In David Eldridge and David Freudenberger (eds.). People and rangelands Building the Future. Proceedings of the VI International Rangeland Congress. Townsville, Queensland, Australia July 19-23.